

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>IN/PA-98</b>	<b>FOR FURTHER ACTION</b> <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small>	
International application No. <b>PCT/IN 99/ 00030</b>	International filing date (day/month/year) <b>15/07/1999</b>	(Earliest) Priority Date (day/month/year)
Applicant  <b>KHANNA, Pushpa</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 5 sheets.  
☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☒ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

**4. With regard to the title,**

- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established by this Authority to read as follows:

**OIL FROM I(MOMORDICA CHARANTIA L.,) ITS METHOD OF PREPARATION AND USES**

**5. With regard to the abstract,**

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

**6. The figure of the drawings to be published with the abstract is Figure No.**

- ☐ as suggested by the applicant.
- ☐ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.

☒ None of the figures.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/IN 99/00030

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 15  
because they relate to subject matter not required to be searched by this Authority, namely:  
  
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Although claim 15 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

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Continuation of Box I.1

Claims Nos.: 15

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/IN 99/00030

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 A61K35/78

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>ROSANE ARMOUGOM ET AL.: "COMPOSITION EN ACIDES GRAS DES EXTRAITS LIPIDIQUES DE QUELQUES GRAINES DE CUCURBITACEES TROPICALES." O.C.L. OLEAGINEUX CORPS GRAS LIPIDES., vol. 5, no. 4, July 1998 (1998-07) - August 1998 (1998-08), pages 323-328, XP000891603 EDITIONS JOHN LIBBEY EUROTEXT, MONTRouGE., FR ISSN: 1258-8210 the whole document</p> <p style="text-align: center;">-/-</p>	1,2,9-12



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

### \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

3 April 2000

Date of mailing of the international search report

10/04/2000

Name and mailing address of the ISA

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/IN 99/00030

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	S. P. TANDON ET AL.: "STUDY OF CUCUMIS MELO MOMORDICA SEED OIL." JOURNAL OF THE INDIAN CHEMICAL SOCIETY., vol. 53, no. 11, November 1976 (1976-11), pages 1161-1162, XP000901224 THE INDIAN CHEMICAL SOCIETY, CALCUTTA., IN ISSN: 0019-4522 the whole document	1,9-12
A	US 5 916 573 A (CLEAVES FREDERICK T ET AL) 29 June 1999 (1999-06-29) cited in the application	
A	US 5 900 240 A (GLOMSKI PETER ET AL) 4 May 1999 (1999-05-04) cited in the application	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IN 99/00030

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5916573	A	29-06-1999	NONE	
US 5900240	A	04-05-1999	NONE	

(19) World Intellectual Property Organization  
International Bureau



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PCT

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GN, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- With international search report.
- With amended claims and statement.

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(81) Designated States (*national*): AE, AL, AM, AT, AU, AZ,  
BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE,



WO 01/05416 A1

(54) Title: OIL FROM *MOMORDICA CHARANTIA* L., ITS METHOD OF PREPARATION AND USES

(57) Abstract: The present invention relates to a novel oil extracted from the seeds of *Momordica charantia* L., for topical application to a body of mammal and used as anti-inflammatory, anti-arthritis, vasculodilatory and wound healing agent, said oil essentially comprising capric acid 0.7-1.2 % by wt., lauric acid 0.6-1 % by wt., palmitic acid 4.2-5.0 % by wt., stearic acid 59-62 % by wt., oleic acid 13-15 % by wt., arachidic acid 3-5 % by wt., linoleic acid 8-10 % by wt., and other undetected minor acids 6-8 % by wt.; and a process for producing such oil.

3/PRTS

10/031288  
531 Rec'd PCT/F. 14 JAN 2002

# OIL FROM I(MOMORDICA CHARANTIA L.,) ITS METHOD OF PREPARATION AND USES

## Field of the invention

The invention relates in general, to a novel oil extracted from the seeds of  
10. *Momordica charantia* L., (bitter gourd), its preparation and use as anti-inflammatory, anti-arthritis, vasculodilatory and wound healing agent.

## Background

The invention relates to a novel oil extracted from the seeds of *Momordica*  
15 *charantia* L., (bitter gourd). *Momordica charantia* is a perennial herb of the family Cucurbitaceae, widely grown in Asia. The herb is endemic to tropical countries like India, S. Africa, Philippines, China and Burma. The species of *Momordica* found in western countries are different from the tropical species in  
20 that, the plants differ in morphological and organoleptic properties. Various parts of this plant, especially the fruits, have been widely used for preparation of hypoglycemic pharmaceutical compositions.

The extract/juice of the fruit is known to exhibit hypoglycemic properties and often recommended to reduce the blood sugar levels in patients suffering from  
25 diabetes mellitus.

## Description of related Prior Art

Natural oils from various plant sources have been used in variety of applications. For instance, US Patent 5,916, 573 discloses grapeseed oil for tropical  
30 application on the skin. Similarly, US Patent 5,900,240 discloses herbal compositions and their use as hypoglycemic agents. The composition of this



### Summary of the invention

In accordance with the above and other objectives, the invention provides an oil composition prepared from the oil extracted from the seeds of *Momordica charantia* L., essentially comprising a mixture of Capric acid, Lauric acid, Palmitic acid, Stearic acid, Oleic acid, Archidic acid, Linoleic acid, other undetected minor acids and esters.

The invention also provides a process for the extraction of oil from the seeds of *Momordica charantia* L., using non-polar solvents.

Further, the invention teaches the use of the oily composition in the treatment of arthritis, diabetes and other conditions developed in diabetic patients.

### Detailed description of the invention

Accordingly, the invention provides oil extracted from the seeds of *Momordica charantia* L., essentially comprising :

1.	Capric acid	0.7-1.2%
2.	Lauric acid	0.6-1%
3.	Palmitic acid	4.2-5.0%
4.	Stearic acid	59-62%
5.	Oleic acid	13-15%
6.	Archid acid	3-5%
7.	Linoleic acid	8-10%
8.	Other undetected minor acids	6-8%

Further, the invention provides a method for the extraction of oil from the seeds of *Momordica charantia* L., comprising the steps of:

In accordance with the present invention, the oil obtained from the seeds of *Momordica charantia* L. is thick reddish-orange in colour, having bitter taste. The oil extracted by the method described hereinabove is obtained in 98.5%  
5 purity. The oil is water immiscible. However, it is soluble in non-polar solvents like benzene, petroleum ether, ethyl ether, acetone and hexane.

The applicant through continued usage and after rigorous experimentation has found that the oil exhibits anti-inflammatory, anti-arthritis, vasulodilatory  
10 properties as it contains several unsaturated components like linoleic acid, oleic acid etc. which are known for their antioxidant and anti-inflammatory properties.

It is found that the oil extracted from *Momordica charantia* L., is very thick and it is preferably used with diluents. Preferably, the oil may be mixed with other  
15 essential or vegetable oils. The essential oils that may be mixed with the oil from *Momordica charantia* could be selected from coconut oil, sesame oil, sunflower oil, olive oil, palm oil, groundnut oil or any such food grade oil. Further, it is found that when such food grade oils are mixed with the oils of *Momordica*, the penetration of the oil mixture into the outermost layers of the skin is enhanced to a  
20 great extent. The *Momordica* oil composition of the invention is prepared by mixing the 75% of the oil of *Momordica charantia* L., with vegetable oils selected from coconut oil, sesame oil sunflower oil, palm oil, olive oil or groundnut oil.

*Momordica charantia* oil composition may be prepared by mixing the oil  
25 extracted from *Momordica charantia* L., with vegetable oils and essential oils. The composition may also include, if desired, a botanical fragrance oil such as lavender oil, sandalwood oil and geranium oils. The oil composition may further include a perfume component or other pharmaceutically acceptable additives. The oil composition is generally in the form of oil, cream, lotion, gel, capsule

Figure 4 represents the condition of the wound on the same patient one month after application of the oil composition of the invention.

- 5 Figure 5 represents the condition of the foot of the same patient two months after application of the oil composition of the invention.

The invention is described in detail with respect to the following examples which are provided as illustrative embodiments only. These examples should not be  
10 construed to limit the scope of the invention in any manner. Modifications and alterations of the invention that may be apparent to those in the art are deemed to be included within the scope of the invention.

**Example - 1. (Oil preparative example)**

15

Extraction of oil from *Momordica charantia* L. :

100 gms of dry seeds were taken from the ripe fruits of *Momordica charantia* L.,. The seeds were split. The split seeds were then thoroughly washed with water 3-4 times to render them substantially free of all impurities. The seeds were then  
20 dried under vacuum and pulverized to a fine powder using a milling device.

Any other conventional device may also be used. The fine powder was then treated with acetone hexane solvent mixed in the ratio 1:2. The mixture was stirred thoroughly and allowed to stand for 48 hours at room temperature. The oil layer  
25 was separated. The oil that separates out as supernatant layer was collected. The oil was then treated with 2-5% zinc acetate dissolved in water so that the salts, last traces of proteins and other impurities are precipitated. The oil was centrifuged and analyzed on gas-liquid chromatograph. The oil purified using gas liquid chromatograph showed the presence of the following fatty acids:

The oil purified using gas liquid chromatograph showed the presence of the following fatty acids:

- Capric acid 0.9%
- Lauric acid 0.70%
- 5 Palmitic acid 4.8 %
- Stearic acid 60.1%
- Oleic acid 13.81%
- Archidic acid 3.28% and
- Linoleic acid 10.00%
- 10 Other minor undetected acids 6.11%.

The oil also contains esters and other undetected minor ingredients.

#### Example 3: Preparation of oil composition

- 15 The oil extracted from *Momordica charantia* L., as discussed in preparative examples 1-2 was kept in a beaker. Pure sesame oil was added to it in the ratio 3:1. The mixture was stirred continuously and thoroughly for 4-10 hours. Thereafter, fragrance oil like sandalwood oil as well as a perfume component were added to the mixture and stirred continuously and thoroughly for 4-10 hours. The  
20 formulation thus prepared stored in a container in a cool dry place.

The oil composition of the present invention can be formulated in a wide variety physical forms which include solutions, lotions, creams, oils, gels, sticks, sprays, ointments, balms, pastes, aerosols etc.

25

For preparation of an ointment, the active ingredients of the oil composition can be incorporated in any pharmacologically acceptable carrier, which is suitable for topical administration to the human skin. As such, the pharmacologically acceptable carrier must be of sufficient purity and have low toxicity to render it

suspensions, creams, etc.). The age group of these patients ranged from 30-80 years. The average duration of illness in the population was more than 5-6 years. All the patients prior to the treatment with the composition of the invention were using standard causes of therapy, exercise etc. Upon commencement with the oil composition as disclosed herein, the patients refrained from using other medications, except yoga and exercises. Specific excerpts from each case history is disclosed in the following examples.

**Example 4 :**

10

A 30 year old Female working as a Receptionist had a bruise at her right elbow. The oil composition was applied to the bruise caused at the elbow. The elbow was first cleaned and dried and the oil composition was applied slowly using a cotton swab. The oil composition was regularly applied after every 4 hours, for about 3-5 weeks. At the end of 15 days, the bruise healed completely.

**Example 5:**

20 The subject was a 65 year old male. This patient had a gangrenous wound on his right foot. The gangrene was in its advanced stages. It was a severe case of gangrene affliction. As there was no fresh blood supply, no healing constituted veins. The oil formulation of the invention was applied by the patient for about 10-12 weeks topically. After each application, the patient reported relief from the pain he suffered. At the end of the 6<sup>th</sup> week itself, the wound started drying up and eventually after the 12 week the wound had healed completely. Figs 1 depicts the gangrenous wound at the time of commencement of the treatment using the oil formulation of the invention. Fig 2 shows the dried wound at the end of the 12<sup>th</sup> week of the treatment.

**Example 9:**

A 35 year old male, Chartered Accountant suffered from osteoarthritis for more than 6 years. He complained of constant pain in the right knee and was unable to walk without a cane. His movements were restricted as the knee had become nearly stiff. Examination revealed that the synovial fluid had dried which lead to muscular tension. He had used oral drugs and pain killers, though of no avail.

This subject used the composition of the invention for about 3 months applying it continuously on the knee 3-4 times a day. After the first week the pain had reduced to a great extent. The subject was advised exercises to the extent possible. After 2 weeks, the patient could flex the knee to 45° with no pain. After 6 weeks, he could flex and rotate the knee in full range. He continued to apply the composition and after 8 weeks, was able to walk freely.

**Example 10:**

In another case, a housewife aged 52 years suffered from obesity. In addition, the patient complained of pain in the knee and ankle due to inflammation. The patient could hardly walk. She was using standard medication comprising drugs and injections, which did not help her much.

When the patient started using the composition of the invention, (application on the knee & ankle 4 times a day) she experienced relief in the dumb constant pain in the first week itself. After 2-3 weeks, she could stand and start walking to a limited extent. At the end of the 3<sup>rd</sup> week, upward and downward movement at the ankle was possible. The knee was capable of flexing upto 45 degrees. After 8 weeks, the patient commenced regular walking, full movement/rotation of the knees and ankles.

The patient was advised to apply the oil composition of the invention about 4 times a day, coupled with regular exercise. The patient reported relief from pain after 2 weeks, she reported restoration of function of both hands.

5

**Example 14:**

A manager aged 58 years, employed in a Bank, was suffering from diabetes mellitus. He also reported neuropathic symptoms with the rise in blood level.

10 This patient was advised to apply the oil composition of the invention 4 times a day on his legs. He experienced relief and after 18 weeks reported complete relief from these symptoms.

**Example 15:**

15

A dog aged 3 years was wounded in a dog fight. The dog had a grievous wound on its left foreleg. The wound was about 1 cm in diameter and about ½ mm deep. The wound was cleaned and the oil composition of the invention was applied to it regularly after every 4 hours. After 10 days the wound started drying up giving  
20 rise to regeneration of tissues at the site of injury. After 30 days it was found that the wound had completely healed.

**Example 16:**

25 A horse aged 4 years was injured by a nail at the stable. The wound was 3 cm long and about ½ mm deep. This wound was cleaned thoroughly and the oil composition of the invention was applied to it nearly 3 - 4 times a day. After 10 days, sufficient amount of the tissue had grown over the wounded area and after 25 days, complete healing was observed.

## I CLAIM:

1. Novel oil extracted from the seeds of *Momordica charantia* L., for topical application to a body of mammal and used as anti-inflammatory, anti-arthritis, vasculodilatory and wound healing agent, said oil essentially comprising :

Capric acid	0.7-1.2% by wt.
Lauric acid	0.6-1% by wt.
Palmitic acid	4.2-5.0% by wt.
Stearic acid	59-62% by wt.
Oleic acid	13-15% by wt.
Archid acid	3-5% by wt.
Linoleic acid	8-10% by wt. and
Other undetected minor acids	6-8% by wt.

2. An oil as claimed in claim 1 wherein the preferred range of the ingredients of the oil is as under:-

Capric acid	0.9% by wt.
Lauric acid	0.8% by wt.
Palmitic acid	4.2 % by wt.
Stearic acid	60.90% by wt.
Oleic acid	13.30% by wt.
Archidic acid	3.20% by wt.
Linoleic acid	9.80% by wt. and
Other minor undetected components and acids	6.90% by wt.



- (i) grinding dry seeds to a fine powder in a suitable mill,
  - (ii) treating the pulverized seeds with a mixture of non-polar solvents,
  - 5 (iii) allowing the mixture to stand for 48 hours at room temperature so that the oil separates out,
  - (iv) collecting the oil from the supernatant layer using a separating funnel,
  - 10 (v) refluxing the mixture obtained in step (vi) with any non-polar solvent to remove the last traces of oil, and
  - (vi) Purification of the oil by precipitating the salts with impurities in it.
- 15 10. A method as claimed in claim 9 wherein the seeds of *Momordica charantia* L. are split, washed thoroughly with water 2-3 times to render the seeds substantially free from impurities and dried under vacuum, before said grinding.
- 20 11. A method as claimed in claim 9 wherein the non-polar solvents used may comprise a mixture of acetone with an aromatic or aliphatic hydrocarbon selected from the group of benzene, hexane, petroleum ether and ethyl ether.
- 25 12. A method as claimed in claim 9 wherein the ratio of the aliphatic or aromatic hydrocarbon in the non-polar solvent mixture may be 2:1.
13. A method as claimed in claim 9 wherein 2-5% zinc acetate dissolved in water may be used to precipitate the proteins and other impurities in the oil.

## AMENDED CLAIMS

[revised by the International Bureau on 08 June 2000 (08.06.00);  
original claims 1-15 replaced by new claims 1-12 (3 pages)]

1. Oil extracted from the seeds of *Momordica charantia* L., useful as anti-inflammatory, anti-arthritis, vasculodilatory and wound healing agent, said oil comprising essentially of:

5	Capric acid	0.7-1.2% by wt.
	Lauric acid	0.6-1% by wt.
	Palmitic acid	4.2-5.0% by wt.
	Stearic acid	59-62% by wt.
	Oleic acid	13-15% by wt.
10	Arachidic acid	3-5% by wt.
	Linoleic acid	8-10% by wt.
	Other undetected minor acids	6-8% by wt.

2. Oil as claimed in claim 1 wherein the preferred range of the ingredients of the oil is as under:-

15	Capric acid	0.9% by wt.
	Lauric acid	0.8% by wt.
	Palmitic acid	4.2 % by wt.
	Stearic acid	60.90% by wt.
20	Oleic acid	13.30% by wt.
	Arachidic acid	3.20% by wt.
	Linoleic acid	9.80% by wt.
	Other <del>minor</del> undetected <del>minor</del> acids	6.90% by wt.

- 25 3. A novel oil composition comprising:-

oil extracted from the seeds	70 to 80% by wt.
of <i>Momordica charantia</i> L,	
one or more vegetable oils,	15 to 25% by wt.

- (v) refluxing the mixture obtained in step (iv) with any non-polar solvent to remove the last traces of oil,
- (vi) purifying the oil by adding 2-5% zinc acetate dissolved in water to precipitate the salts with impurities from the oil, and
- 5 (vii) analysis of the oil extracted by gas liquid chromatography.

9. A process as claimed in claim 8 wherein the seeds of *Momordica charantia* L., are split, washed thoroughly with water 2-3 times to render the seeds substantially free from impurities and dried under vacuum before said  
10 grinding.

10. A process as claimed in claim 8 wherein the non-polar solvent comprises a mixture of acetone with an aromatic or aliphatic hydrocarbon selected from the group of benzene, hexane, petroleum ether and ethyl ether.

15

11. A process as claimed in claim 10 wherein the ratio of the aliphatic or aromatic hydrocarbon in the non-polar solvent mixture is 2:1.

12. Use of an oil extracted from *Momordica charantia* L or its composition for  
20 treatment of inflammation, arthritis, vasculodilation and wounds in a patient body, by applying the oil or composition as claimed in claims 1 to 7 on the affected area of the patient body for a period of about six to twenty weeks.

## 2. Tandon et al :

This citation teaches extraction of oil from *Cucumis melo momordica*, which is a totally different plant. Whereas, the invention of the instant application relates to extraction of oil from *Momordica charantia* L. which is a different plant. Each species in Cucurbitaceae family provides oil having different constituents and properties. Therefore, the oils from the two different plants cannot be equated. The method of extraction used by Tandon et al. is the distillation method, whereas, a totally different method is taught by the invention of the application. The method taught by the citation involves the steps of heating by which unsaturated fatty acids are denatured (the double bonds in the unsaturated fatty acids is affected). The invention of the application teaches a method conducted at room temperature and pressure, whereby all the ingredients of the oil are extracted in their natural form and the oil thus extracted is pure and is capable of use for therapeutic purposes for mammals. The oil is extracted without affecting the efficacy of the oil.

## 3. US Patent 5,916,573:

This US Patent 5,916,573, has been referenced in the "prior art" section of the instant application and falls in "A" category. The patent teaches extraction of "grape seed oil" whereas the application relates to the extraction and use of oil from *Momordica charantia* L.

## 4. US Patent 5,900,240:

This US Patent 5,900,240 relates to a composition comprising several herbs one of which is *Momordica charantia* L. The composition is useful for treatment of hypoglycemic conditions in mammals. However, this citation does not disclose the oil and its use obtained from *Momordica charantia* L.

All the citations teach away from the invention of the application.

10/031288



Figure 1



Figure 2



Figure 3



Figure 4

10/031288



Figure 5

# INTERNATIONAL SEARCH REPORT

Internat. Application No.  
PCT/IN 99/00030

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A61K35/78

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>ROSANE ARMOUGOM ET AL.: "COMPOSITION EN ACIDES GRAS DES EXTRAITS LIPIDIQUES DE QUELQUES GRAINES DE CUCURBITACEES TROPICALES." O.C.L. OLEAGINEUX CORPS GRAS LIPIDES., vol. 5, no. 4, July 1998 (1998-07) - August 1998 (1998-08), pages 323-328, XP000891603 EDITIONS JOHN LIBBEY EUROTEXT, MONTRouGE., FR ISSN: 1258-8210 the whole document</p> <p style="text-align: center;">-/-</p>	1,2,9-12

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "Z" document member of the same patent family

Date of the actual completion of the international search

3 Apr11 2000

Date of mailing of the international search report

10/04/2000

Name and mailing address of the ISA

European Patent Office, P.O. Box 1  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 051 apo nl,  
Fax: (+31-70) 340-3010

Authorized officer

Respp, G



## INTERNATIONAL SEARCH REPORT

Int. l. application No.

PCT/IN 99/00030

**Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 15  
because they relate to subject matter not required to be searched by this Authority, namely:  
  
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)**

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IN 99/00030

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5916573	A	29-06-1999	NONE	
US 5900240	A	04-05-1999	NONE	

PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT  
(PCT Rule 71.1)

To:

DEVADOSS, Calab, Gabriel  
KUMARAN & SAGAR  
84C, C6 Lane(Off Central Avenue)  
Sainik Farms  
110 062 New Delhi  
INDE

Date of mailing  
(day/month/year)

24.10.2001

Applicant's or agent's file reference  
IN/PA-98

IMPORTANT NOTIFICATION

International application No.  
PCT/IN99/00030

International filing date (day/month/year)  
15/07/1999

Priority date (day/month/year)  
15/07/1999

Applicant

KHANNA, Pushpa

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.


4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEAV

 European Patent Office  
D-80298 Munich  
Tel. +49 89 23399 - 0 Tx: 523656 epmu d  
Fax: +49 89 23399 - 4465

Authorized officer

Ferre Vasconcelos, M

Tel. +49 89 23399-7905



## PATENT COOPERATION TREATY

PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference IN/PA-98	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/IN99/00030	International filing date (day/month/year) 15/07/1999	Priority date (day/month/year) 15/07/1999
International Patent Classification (IPC) or national classification and IPC A61K35/78		
Applicant KHANNA, Pushpa		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
  2. This REPORT consists of a total of 6 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 25/10/2000	Date of completion of this report 24.10.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399-0 Tx: 523656 epmu d Fax: +49 89 2399-4465	Authorized officer Markopoulos, E Telephone No. +49 89 2399 8658 

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/IN99/00030**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-3,6-16	as originally filed		
4,5	as received on	02/08/2001	with letter of 27/07/2001

**Claims, No.:**

1-12	as received on	02/08/2001	with letter of 27/07/2001
------	----------------	------------	---------------------------

**Drawings, sheets:**

1/3-3/3	as originally filed
---------	---------------------

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the **sequence listing**:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/IN99/00030

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:
5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):  
*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*  
**see separate sheet**
6. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:
- ☐ the entire international application.
- ☒ claims Nos. 12 in regard to industrial applicability.

because:

- ☒ the said international application, or the said claims Nos. 12 relate to the following subject matter which does not require an international preliminary examination (*specify*):  
**see separate sheet**
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the said claims Nos. .
2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:
- ☐ the written form has not been furnished or does not comply with the standard.
- ☐ the computer readable form has not been furnished or does not comply with the standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/IN99/00030**

**1. Statement**

Novelty (N)	Yes:	Claims	1-12
	No:	Claims	-
Inventive step (IS)	Yes:	Claims	1-12
	No:	Claims	-
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	-

**2. Citations and explanations  
see separate sheet**

**Re Item I**

**Basis of the opinion**

The amendments filed with the letter dated July, 27th 2001 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT. The amendment concerned is the following: due to the probably accidental deletion of the word "seeds" in claim 3, oil from any part of the plant *M. charantia* would be included in the subject-matter of the claim.

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

Claim 12 relates to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of these claims (Article 34(4)(a)(i) PCT).

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

- D1: ROSANE ARMOUGOM ET AL.: 'COMPOSITION EN ACIDES GRAS DES EXTRAITS LIPIDIQUES DE QUELQUES GRAINES DE CUCURBITACEES TROPICALES.' O.C.L. OLEAGINEUX CORPS GRAS LIPIDES., vol. 5, no. 4, July 1998 (1998-07) - August 1998 (1998-08), pages 323-328, XP000891603 EDITIONS JOHN LIBBEY EUROTTEXT, MONTROUGE., FR ISSN: 1258-8210
- D2: S. P. TANDON ET AL.: 'STUDY OF CUCUMIS MELO MOMORDICA SEED OIL' JOURNAL OF THE INDIAN CHEMICAL SOCIETY., vol. 53, no. 11, November 1976 (1976-11), pages 1161-1162, XP000901224 THE INDIAN CHEMICAL SOCIETY, CALCUTTA., IN ISSN: 0019-4522



In accordance with the present invention, the oil obtained from the seeds of *Momordica charantia* L. is thick reddish-orange in colour, having bitter taste. The oil extracted by the method described hereinabove is obtained in 98.5% purity. The oil is water immiscible. However, it is soluble in non-polar solvents like benzene, petroleum ether, ethyl ether, acetone and hexane.

The applicant through continued usage and after rigorous experimentation has found that the oil exhibits anti-inflammatory, anti-arthritis, vasodilatory properties as it contains several unsaturated components like linoleic acid, oleic acid etc which are known for their antioxidant & anti-inflammatory properties.

It is found that the oil extracted from *Momordica charantia* L. is very thick and it is preferably used with diluents. Preferably, the oil may be mixed with other essential or vegetable oils. The essential oils that may be mixed with the oil from *Momordica charantia* could be selected from coconut oil, sesame oil, sunflower oil, olive oil, palm oil, groundnut oil or any such food grade oil. Further, it is found that when such food grade oils are mixed with the oils of *Momordica*, the penetration of the oil mixture into the outermost layers of the skin is enhanced to a great extent. The *Momordica* oil composition of the invention is prepared by mixing the 75% of the oil of *Momordica charantia* L. with vegetable oils selected from coconut oil, sesame oil, sunflower oil, palm oil, olive oil or groundnut oil.

*Momordica charantia* oil composition may be prepared by mixing the oil extracted from *Momordica charantia* L. with vegetable oils and essential oils. The composition may also include, if desired, a botanical fragrance oil such as lavender oil, sandalwood oil, rose oil and geranium oils. The oil composition may further include a perfume component or other pharmaceutically acceptable additives. The oil composition is generally in the form of oil, cream, lotion, gel, capsule

SUBSTITUTE SHEET (ART 34)

AMENDED SHEET

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- (i) grinding the dry seeds to a fine powder in a suitable mill,
- (ii) treating the pulverized seeds with a mixture of non-polar solvents,
- 5 (iii) allowing the mixture to stand for 48 hours at room temperature so that the oil separates out,
- (iv) collecting the oil from the supernatant layer using a separatory funnel,
- 10 (v) refluxing the mixture obtained in step (vi) with any non-polar solvent to remove the last traces of oil, and
- (vi) purification of the oil by precipitating the salts with impurities in it.

15 In one embodiment, the seeds of *Momordica charantia* L., are split, washed thoroughly with water, 2-3 times to render it substantially free from impurities and dried under vacuum, before using the seeds for extraction of the oil.

20 In another embodiment, the non-polar solvents used for extraction of oil may comprise a mixture of acetone with an aromatic or aliphatic hydrocarbon selected from the group of benzene, hexane, petroleum ether and ethyl ether.

In yet another embodiment, the ratio of acetone to the aliphatic or aromatic hydrocarbon in the non-polar solvent mixture may be 2:1.

25 In yet another feature, 2-5% zinc acetate dissolved in water may be used to precipitate the proteins and other impurities in the oil.

30 In another feature, the oil extracted is analyzed for its fatty acid contents using gas liquid chromatography (GLC).

It may be noted that most of the plant parts of *Momordica* contain the oil disclosed by the invention, in varying degrees. As such, the oil may be extracted using any plant parts preferably seeds.

35 A novel oil composition comprising oil extracted from the seeds of *Momordica charantia* L 70 to 80% by wt., one or more vegetable oils-15 to 25% by wt., fragrance oil - 3% by wt, essential oil - 1% by wt, and at least one perfume component - 2% by wt.

SUBSTITUTE SHEET (ART 34)

INPA-98

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**CLAIMS:**

1. Oil extracted from the seeds of *Momordica charantia* L., for topical application to the body of a mammal, and useful as anti-inflammatory, anti-arthritis, vasculodilatory and wound healing agent, said oil comprising essentially of::

Capric acid	0.7-1.2% by wt.
Lauric acid	0.6-1% by wt.
Palmitic acid	4.2-5.0% by wt.
Stearic acid	59-62% by wt.
Oleic acid	13-15% by wt.
Arachidic acid	3-5% by wt.
Linoleic acid	8-10% by wt.
Other undetected minor acids	6-8% by wt.

2. Oil as claimed in claim 1 wherein the ingredients of the oil are as under:-

Capric acid	0.9% by wt.
Lauric acid	0.8% by wt.
Palmitic acid	4.2 % by wt.
Stearic acid	60.90% by wt.
Oleic acid	13.30% by wt.
Arachidic acid	3.20% by wt.
Linoleic acid	9.80% by wt.
Other minor undetected components and acids	6.90% by wt.

3. A novel oil composition comprising:-  
oil extracted from the 70 to 80% by wt.  
of *Momordica charantia* L.,  
one or more vegetable oils, 15 to 25% by wt.

SUBSTITUTE SHEET (ART 30)

RECEIVED AMENDED SHEET

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INPA-98

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fragrance oil.

3% by wt.

essential oil

1% by wt.

and at least one perfume component 2% by wt.

4. An oil composition as claimed in claim 3 wherein the vegetable oil is selected from sesame oil, coconut oil, groundnut oil, olive oil, palm oil and other foodgrade oil.
5. An oil composition as claimed in claim 3 wherein the fragrance oil is selected from rose oil, sandalwood oil, geranium oil or lavender oil.
6. An oil composition as claimed in claim 3 wherein the composition is in physical forms selected from cream, gel, lotion, or combinations thereof.
7. An oil composition as claimed in claim 3 wherein the composition is prepared by mixing the oil extracted from *Momordica charantia* L. with suitable pharmaceutically acceptable carriers.
8. A process for the extraction of oil from the seeds of *Momordica charantia* L., comprising the steps of :
  - (i) grinding dry seeds to a fine powder in a suitable mill,
  - (ii) treating the pulverized seeds with a mixture of non- polar solvents,
  - (iii) allowing the mixture to stand for 48 hours at room temperature so that the oil separates out,
  - (iv) collecting the oil from the supernatant layer using a separating funnel,

SUBSTITUTE SHEET (ART 34)

AMENDED SHEET

08/2001

IN/PA-98

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- (v) refluxing the mixture obtained in step (iv) with any non-polar solvent to remove the last traces of oil,
  - (vi) purifying the oil by adding 2-5% zinc acetate dissolved in water to precipitate the salts with impurities from the oil, and
  - (vii) analysis of the oil extracted by gas liquid chromatography..
9. A process as claimed in claim 8 wherein the seeds of *Momordica charantia* L., are split, washed thoroughly with water 2-3 times to render the seeds substantially free from impurities and dried under vacuum before the grinding in step (1).
10. A process as claimed in claim 8 wherein the non-polar solvent comprises a mixture of acetone with an aromatic or aliphatic hydrocarbon selected from the group of benzene, hexane, petroleum ether and ethyl ether.
11. A process as claimed in claim 10 wherein the ratio of the aliphatic or aromatic hydrocarbon in the non-polar solvent mixture is 2:1.
12. Use of the oil extracted from *Momordica charantia* L or its composition for treatment of inflammation, arthritis, vasculodilation and wounds in a patient body, by applying the oil or composition as claimed in claims 1 to 7 on the affected area of the patient body for a period of about six to twenty weeks.

SUBSTITUTE SHEET (ART 34)

AMENDED SHEET

100/2004

# PATENT COOPERATION TREATY

## PCT

14

REC'D 26 OCT 2001

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>IN/PA-98</b>	<div style="display: flex; justify-content: space-between;"> <div><b>FOR FURTHER ACTION</b></div> <div>See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)</div> </div>	
International application No. <b>PCT/IN99/00030</b>	International filing date (day/month/year) <b>15/07/1999</b>	Priority date (day/month/year) <b>15/07/1999</b>
International Patent Classification (IPC) or national classification and IPC <b>A61K35/78</b>		
Applicant <b>KHANNA, Pushpa</b>		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 5 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>		
Date of submission of the demand  <b>25/10/2000</b>	Date of completion of this report  <b>24.10.2001</b>	
Name and mailing address of the international preliminary examining authority:  <div style="display: inline-block; vertical-align: middle;"> <b>European Patent Office</b>            D-80298 Munich            Tel. +49 89 2399 - 0 Tx: 523656 epmu d            Fax: +49 89 2399 - 4465         </div>	Authorized officer  <b>Markopoulos, E</b>  Telephone No. +49 89 2399 8658	



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/IN99/00030

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*)  
**Description, pages:**

1-3,6-16 as originally filed

4,5 as received on 02/08/2001 with letter of 27/07/2001

**Claims, No.:**

1-12 as received on 02/08/2001 with letter of 27/07/2001

**Drawings, sheets:**

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/IN99/00030

- ☐ the description,            pages:  
☐ the claims,                Nos.:  
☐ the drawings,            sheets:
5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):  
*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*  
**see separate sheet**
6. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:
- ☐ the entire international application.
- ☒ claims Nos. 12 in regard to industrial applicability.

because:

- ☒ the said international application, or the said claims Nos. 12 relate to the following subject matter which does not require an international preliminary examination (*specify*):  
**see separate sheet**
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the said claims Nos. .
2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:
- ☐ the written form has not been furnished or does not comply with the standard.
- ☐ the computer readable form has not been furnished or does not comply with the standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/IN99/00030

1. Statement

Novelty (N)	Yes:	Claims	1-12
	No:	Claims	-
Inventive step (IS)	Yes:	Claims	1-12
	No:	Claims	-
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	-

2. Citations and explanations  
**see separate sheet**

**Re Item I**

**Basis of the opinion**

The amendments filed with the letter dated July, 27th 2001 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT. The amendment concerned is the following: due to the probably accidental deletion of the word "seeds" in claim 3, oil from any part of the plant *M. charantia* would be included in the subject-matter of the claim.

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

Claim 12 relates to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of these claims (Article 34(4)(a)(i) PCT).

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

- D1: ROSANE ARMOUGOM ET AL.: 'COMPOSITION EN ACIDES GRAS DES EXTRAITS LIPIDIQUES DE QUELQUES GRAINES DE CUCURBITACEES TROPICALES.' O.C.L. OLEAGINEUX CORPS GRAS LIPIDES., vol. 5, no. 4, July 1998 (1998-07) - August 1998 (1998-08), pages 323-328, XP000891603 EDITIONS JOHN LIBBEY EUROTTEXT, MONTROUGE., FR ISSN: 1258-8210
- D2: S. P. TANDON ET AL.: 'STUDY OF CUCUMIS MELO MOMORDICA SEED OIL.' JOURNAL OF THE INDIAN CHEMICAL SOCIETY., vol. 53, no. 11, November 1976 (1976-11), pages 1161-1162, XP000901224 THE INDIAN CHEMICAL SOCIETY, CALCUTTA., IN ISSN: 0019-4522

2. D1 describes fatty acid compositions of 6 cucurbitaceae seed oils such as M. charantia oil and compares them to each other. Since the amounts of the fatty acids listed (lauric, myristic, palmitic, palmitoleic, stearic, oleic, linoleic, linolenic, arachidic and gondoic acid) are different from claim 1 but for oleic acid (table 4), and since the extraction process involves heating and no standing for 48 hours at room temperature, moreover there is no purification as in step (vi), claims 1-12 can be regarded as novel in respect to D1.

D2 relates to the fatty acid content of a seed oil of a plant of the same family, Cucumis melo momordica, in relation with its cooling effect.

Hence, the subject-matter of claims 1-12 is novel (Article 33(2) PCT).

3. The problem to be solved by the present invention may be regarded as finding an alternative to the pharmaceutical preparations for topical administration exhibiting an anti-inflammatory, vasculodilatory and anti-arthritic property.

The solution to this problem proposed in claims 1-12 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons: M. charantia is known as hypoglycemic agent, moreover it is used as anthelmintic, purgative, antiinfective agent and for diseases of the skin (D1: p. 324, col. 2, par. 1). The use of the oil extracted from the seeds for anti-inflammatory, vasculodilatory, wound-healing and anti-arthritic purpose cannot be derived from the prior art at hand.

4. For the assessment of the present claim 12 on the question whether they are industrially applicable, no unified criteria exist in the PCT Contracting States. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow, however, claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.

# PATENT COOPERATION TREATY

From the:  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

DEVADOSS, Calab, Gabriel  
KUMARAN & SAGAR  
84C, C6 Lane(Off Central Avenue)  
Sainik Farms  
110 062 New Delhi  
INDE

# PCT

## WRITTEN OPINION

(PCT Rule 66)

Date of mailing  
(day/month/year) 10.07.2001

Applicant's or agent's file reference  
IN/PA-98

**REPLY DUE** within 1 month(s)  
from the above date of mailing

International application No.  
PCT/IN99/00030

International filing date (day/month/year)  
15/07/1999

Priority date (day/month/year)  
15/07/1999

International Patent Classification (IPC) or both national classification and IPC  
A61K35/78

Applicant  
KHANNA, Pushpa

1. This written opinion is the first drawn up by this International Preliminary Examining Authority.

2. This opinion contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain document cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

3. The applicant is hereby invited to reply to this opinion.

**When?** See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also:** For an additional opportunity to submit amendments, see Rule 66.4.  
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.  
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 15/11/2001

Name and mailing address of the international preliminary examining authority:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Fax: 523656 gpmu:j  
Fax. +49 89 2399 - 4465

Authorized officer / Examiner

Markopoulos, E

Formulating officer and date of signature of the report

Exner, K

Telephone No. +49 89 2399 7826



**I. Basis of the opinion**

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

**Description, pages:**

1-16 as originally filed

**Claims, No.:**

1-12 as amended under Article 19

**Drawings, sheets:**

1/3-3/3 as originally filed

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

☐ the drawings, sheets:

5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

see separate sheet

6. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been and will not be examined in respect of:

☐ the entire international application,

☒ claims Nos. 12 in regard to industrial applicability,

because:

☒ the said international application, or the said claims Nos. 12 relate to the following subject matter which does not require an international preliminary examination (*specify*):  
see separate sheet

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos. .

2. A written opinion cannot be drawn due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)

Claims

Inventive step (IS)

Claims

Industrial applicability (IA)      Claims

2. Citations and explanations  
see separate sheet

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
see separate sheet

**Re Item I**

**Basis of the opinion**

The amendments filed with the International Bureau under Article 19(1) introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 19(2) PCT. The amendments concerned are the following: the deletion of the words "components and" in claim 2 since the percentage 6.90% refers to both undetected components and acids (see also page 10).

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

Claim 12 relates to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of these claims (Article 34(4)(a)(i) PCT).

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

- D1: ROSANE ARMOUGOM ET AL.: 'COMPOSITION EN ACIDES GRAS DES EXTRAITS LIPIDIQUES DE QUELQUES GRAINES DE CUCURBITACEES TROPICALES.' O.C.L. OLEAGINEUX CORPS GRAS LIPIDES., vol. 5, no. 4, July 1998 (1998-07) - August 1998 (1998-08), pages 323-328, XP000891603 EDITIONS JOHN LIBBEY EUROTTEXT, MONTROUGE., FR ISSN: 1258-8210
- D2: S. P. TANDON ET AL.: 'STUDY OF CUCUMIS MELO MOMORDICA SEED OIL.' JOURNAL OF THE INDIAN CHEMICAL SOCIETY., vol. 53, no. 11, November 1976 (1976-11), pages 1161-1162, XP000901224 THE INDIAN CHEMICAL SOCIETY, CALCUTTA., IN ISSN: 0019-4522



2. D1 describes fatty acid compositions of 6 cucurbitaceae seed oils such as *M. charantia* oil and compares them to each other. Since the amounts of the fatty acids listed (lauric, myristic, palmitic, palmitoleic, stearic, oleic, linoleic, linolenic, arachidic and gondoic acid) are different from claim 1 but for oleic acid (table 4), and since the extraction process involves heating and no standing for 48 hours at room temperature, moreover there is no purification as in step (vi), claims 1-12 can be regarded as novel in respect to D1.

D2 relates to the fatty acid content of a seed oil of a plant of the same family, *Cucumis melo momordica*, in relation with its cooling effect.

Hence, the subject-matter of claims 1-12 is novel (Article 33(2) PCT).

3. The problem to be solved by the present invention may be regarded as finding an alternative to the pharmaceutical preparations for topical administration exhibiting an anti-inflammatory, vasculodilatory and anti-arthritic property.

The solution to this problem proposed in claims 1-12 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons: *M. charantia* is known as hypoglycemic agent, moreover it is used as anthelmintic, purgative, antiinfective agent and for diseases of the skin (D1: p. 324, col. 2, par. 1).

The use of the oil extracted from the seeds for anti-inflammatory, vasculodilatory, wound-healing and anti-arthritic purpose cannot be derived from the prior art at hand.

4. For the assessment of the present claim 12 on the question whether they are industrially applicable, no unified criteria exist in the PCT Contracting States. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow, however, claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.

**Re Item VIII**

**Certain observations on the international application**

1. Claims 2, 3, and 5 are not supported by the description as required by Article 6 PCT, as their scope is broader than justified by the description and drawings. The reasons therefore are the following:

The range of the ingredients of claim 2 only is mentioned on page 10 as belonging to an oil composition and not as being the range of the oil.

Claim 3 is not supported in its entirety and "rose oil" in claim 5 is lacking in the description.

2. Furthermore, claim 5 is not clear in respect of "essential oil" since the mentioned oils are cited in the description as fragrance oils (p. 5).

3. The word "arachidic acid" is not correctly written.

## PCT

## DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of International preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only

Identification of IPEA

Date of receipt of DEMAND

## Box No.1 IDENTIFICATION OF THE INTERNATIONAL APPLICATION

Applicant's or agent's file reference  
0001

International application No.

PCT/IN99/00030

International filing date(day/month/year)

July 15, 1999  
(15.07.1999)

(Earliest)Priority date (day/month/year)

Title of Invention :

"NOVEL OIL FROM MOMORDICA CHARANTIA-L, ITS METHOD OF PREPARATION AND USES"

## Box No.II APPLICANT(S)

Name and address : (Family name followed by given name: for a legal entity, full official designation.  
The address must include postal code and name of country)

KHANNA, Pushpa  
E-14/7, 1<sup>st</sup> Floor  
Vasant Vihar  
New Delhi 110 057  
India

Telephone No.:  
91-011-614-3619

Facsimile No.:

State (that is, country) of nationality :

IN

State (that is, country) of residence:

IN

**Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**The following person is ☒ agent ☐ common representative

and ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.  
☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.  
☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.

Name and address : (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country)

**DEVADOSS, CALAB, GABRIEL  
KUMARAN & SAGAR  
84-C, C-6 Lane (Off Central Avenue)  
Sainik Farms  
New Delhi 110 062  
INDIA**

Telephone No.

(011) 653 3182

Facsimile No.

(011) 653 3889

☐ **Address for correspondence :** Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

**Box No.IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION****Statement concerning amendments : \***

1. The applicant wishes the international preliminary examination to start on the basis of :

- ☒ the international application as originally filed
- the description ☒ as originally filed  
☐ as amended under Article 34
- the claims ☐ as originally filed  
☒ as amended under Article 19 (together with any accompanying statement)  
☐ as amended under Article 34  
☐ the drawings as originally filed  
☐ as amended under Article 34

1 ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.

2. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired).*

- Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the International application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

**Language for the purposes of international preliminary examination : English**

- ☒ which is the language in which the international application was filed.
- ☐ which is the language in which a translation furnished for the purposes of international search.
- ☐ which is the language of publication of the international application.
- ☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.

**Box No.V ELECTION OF STATES**

The applicant hereby elects all eligible States (*that is, all States which have been designated and which are bound by Chapter II of the PCT*)

excluding the following States which the applicant wishes not to elect :

**Box No.VI CHECK LIST**

The demand is accompanied by the following elements, in the language Referred to Box No.IV, for the purposes of international preliminary Examination :

For International Preliminary Examining Authority use only

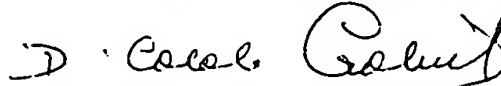
			received	not received
1.	translation of International application	sheets	<input type="checkbox"/>	<input type="checkbox"/>
2.	amendments under Article 34	sheets	<input type="checkbox"/>	<input type="checkbox"/>
3.	copy (or, where required, translation) of amendment) under Article 19	sheets	<input type="checkbox"/>	<input type="checkbox"/>
4.	copy (or, where required, translation) of amendment) under Article 19	sheets	<input type="checkbox"/>	<input type="checkbox"/>
5.	letter	1 sheets	<input type="checkbox"/>	<input type="checkbox"/>
6.	other (specify) :	sheets	<input type="checkbox"/>	<input type="checkbox"/>

The demand is also accompanied by the item(s) marked below :

- |  |   |
|--|---|
| 1. <input checked="" type="checkbox"/> fee calculation sheet                             | 4. <input type="checkbox"/> statement explaining lack of signature                                  |
| 2. <input type="checkbox"/> separate signed power of attorney                            | 5. <input type="checkbox"/> nucleotide and or amino acid sequence listing in computer readable form |
| 3. <input type="checkbox"/> copy of general power of attorney, reference number, if any: | 6. <input type="checkbox"/> other (specify)   |

**Box No.VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE**

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).



DEVADOSS, CALAB, GABRIEL

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND :
2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):
3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply. ☐ The applicant has been informed accordingly.
4. ☐ The date of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5
5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on :

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

GABRIEL, Devadoss, Caleb  
Kumaran & Sagar  
84-C, C-6 Lane  
(Off Central Avenue)  
Sainik Farms  
New Delhi 110 062  
INDE

Date of mailing (day/month/year) 28 November 2000 (28.11.00)		<b>IMPORTANT NOTIFICATION</b>  International filing date (day/month/year) 15 July 1999 (15.07.99)	
Applicant's or agent's file reference IN/PA-98			
International application No. PCT/IN99/00030			

1. The following indications appeared on record concerning:			
<input type="checkbox"/> the applicant	<input type="checkbox"/> the inventor	<input checked="" type="checkbox"/> the agent	<input type="checkbox"/> the common representative
Name and Address GABRIEL, Devadoss, Caleb Kumaran & Sagar 16 Aradhana R.K. Puram Sector XIII New Delhi 110 066 India		State of Nationality	State of Residence
		Telephone No. 91 011 688 5655	
		Facsimile No. 91 011 688 6070	
		Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:			
<input type="checkbox"/> the person	<input type="checkbox"/> the name	<input checked="" type="checkbox"/> the address	<input type="checkbox"/> the nationality
<input type="checkbox"/> the residence			
Name and Address GABRIEL, Devadoss, Caleb Kumaran & Sagar 84-C, C-6 Lane (Off Central Avenue) Sainik Farms New Delhi 110 062 India		State of Nationality	State of Residence
		Telephone No. 91 011 653 3182	
		Facsimile No. 91 011 653 3889	
		Teleprinter No.	

3. Further observations, if necessary: The new agent's address on the Demand has been considered as a change under Rule 92bis. In case of disagreement, the International Bureau should be notified immediately.	
---	--

4. A copy of this notification has been sent to:	
<input checked="" type="checkbox"/> the receiving Office <input type="checkbox"/> the International Searching Authority <input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> the designated Offices concerned <input checked="" type="checkbox"/> the elected Offices concerned <input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  C. Cupello  Telephone No.: (41-22) 338.83.38
---	--



PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
US Department of Commerce  
United States Patent and Trademark  
Office, PCT  
2011 South Clark Place Room  
CP2/5C24  
Arlington, VA 22202  
ETATS-UNIS D'AMERIQUE  
in its capacity as elected Office

Date of mailing: 25 January 2001 (25.01.01)	
International application No.: PCT/IN99/00030	Applicant's or agent's file reference: IN/PA-98
International filing date: 15 July 1999 (15.07.99)	Priority date:
Applicant: KHANNA, Pushpa	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International preliminary Examining Authority on:  
25 October 2000 (25.10.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer:  J. Zahra Telephone No.: (41-22) 338.83.38
---	---

# PATENT COOPERATION TREATY

**PCT**

## INFORMATION CONCERNING ELECTED OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

From the **INTERNATIONAL BUREAU**

To:

GABRIEL, Devadoss, Caleb  
Kumaran & Sagar  
84-C, C-6 Lane  
(Off Central Avenue)  
Sainik Farms  
New Delhi 110 062  
INDE

Date of mailing (day/month/year) 25 January 2001 (25.01.01)		<b>IMPORTANT INFORMATION</b>	
Applicant's or agent's file reference IN/PA-98			
International application No. PCT/IN99/00030	International filing date (day/month/year) 15 July 1999 (15.07.99)	Priority date (day/month/year)	
Applicant KHANNA, Pushpa			

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

AP : GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW  
EP : AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE  
National : AU, BG, CA, CN, CZ, DE, IL, JP, KP, KR, MN, NO, NZ, PL, RO, RU, SE, SK, US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM  
OA : BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG  
National : AE, AL, AM, AT, AZ, BA, BB, BR, BY, CH, CU, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IN, IS, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MW, MX, PT, SD, SG, SI, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW

3. The applicant is reminded that he must enter the "national phase" before the expiration of 30 months from the priority date before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

The entry into the European regional phase is postponed until 31 months from the priority date for all States designated for the purposes of obtaining a European patent.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. (41-22) 740.14.35	Authorized officer:  <p style="text-align: center;">J. Zahra</p> Telephone No. (41-22) 338.83.38
--	--

PCT

From the INTERNATIONAL BUREAU

NOTICE INFORMING THE APPLICANT OF THE  
COMMUNICATION OF THE INTERNATIONAL  
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:

GABRIEL, Devadoss, Caleb  
Kumaran & Sagar  
84-C, C-6 Lane  
(Off Central Avenue)  
Sainik Farms  
New Delhi 110 062  
INDE

Date of mailing (day/month/year) 25 January 2001 (25.01.01)		
Applicant's or agent's file reference IN/PA-98		IMPORTANT NOTICE
International application No. PCT/IN99/00030	International filing date (day/month/year) 15 July 1999 (15.07.99)	
Applicant KHANNA, Pushpa		

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:  
AU,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:  
AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CU,CZ,DE,DK,EA,EE,EP,ES,FI,GB,GD,GE,GH,  
GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,NO,NZ,OA,  
PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,UA,UG,UZ,VN,YU,ZA,ZW  
The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on  
25 January 2001 (25.01.01) under No. WO 01/05416

## REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

## REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  J. Zahra
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10/031288

July 27, 2001

European Patent Office  
D-80298 Munich,  
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Attn: Mr. Markopoulos, E

Fax # 0049-89-2399-7826/4465

In Re: PCT/IN00/00030  
Applicant: Khanna, Pushpa  
International Filing Date: July 15, 1999  
Priority date: July 15, 1999  
Title: Novel oil from *Momordica charantia* L, its  
method of preparation and uses  
Our Ref: 001

Dear Sir,

We submit therewith our comments on the Written Opinion  
alongwith amendments to the claims and the description.

Since the Applicant is new to the PCT system, and in the  
event the Examiner has further queries, we may be given an  
opportunity, by way of an interview on a date convenient to  
the Examiner. Favourable consideration of the response is  
requested.

Yours faithfully,

D.C. GABRIEL  
ATTORNEY FOR THE APPLICANT  
KUMARAN & SAGAR

Encl: Response and amended claims

In re International Application of: KHANNA, Pushpa

International Application No: PCT/IN99/00030

International filing date: July 15, 1999 (15.7.1999)

For: Novel oil from *Momordica charantia* L, its method of preparation and uses

RESPONSE TO THE WRITTEN OPINION

A written opinion drawn up by the International Preliminary Examining Authority was mailed on July 10, 2001. The response of the Applicant to the issues raised in the Written Opinion are as under:

1. Amendment to the claims:

Claims 1 to 12 have been amended to make these claims clear and unambiguous. A marked up copy is attached to show the changes made in the claims. The amended claims have been drawn up on substitute sheets annexed herewith.

Claim 1: The word 'archidic' is corrected as 'arachidic'.

Further, in this claim, the words 'for topical application to the body of a mammal, and' has been inserted in this claim to restrict the scope of the claim to topical applications. This expression was present in the claims as originally filed and finds support in the specification as filed on pages 5, 6 at paragraphs 4, lines 25 onwards. Further, specific support can be found on page 9, lines 26 to 30.

Claim 2: The words 'the preferred range of' before the word 'the ingredients' has been deleted to read as

'ingredients of the oil' only. The words 'components and' have been added after the word 'undetected'. The word 'minor' after 'detected' has been deleted. Support for the expression 'other minor undetected acids and components' can be found at page 8 line 10 of the specification. The word 'archidic' has been corrected as 'arachidic'.

**Claim 3:** Appearance of the word 'and' before 'oil' being erroneous has been deleted.

**Claim 5:** The word 'essential oil' has been replaced with the words 'fragrance oil'.

**Claim 6:** The word 'capsule' in this claim has been deleted as the composition is for topical administration only.

**Claim 9:** The words 'in step (i)' has been added after the word 'grinding' to make it clear that the grinding referred is that of step (i).

## **2. Comments :**

The Applicant requests consideration of the amended claims with the following comments:

- a. Re Item 1: The Examiner has expressed an opinion that deletion of the words 'components and' in the amendments made under Art 19, broadens the disclosure. Accordingly, the Applicant has now amended this claim to recite "Other minor undetected components and acids". This amendment is consistent with the disclosure as originally filed.
- b. Re Item VIII: Certain observations have been made as regards claims 2,3 and 5. These have been addressed as under:

(i) Claim 2: The opening lines of this claim has been amended to read "Oil as claimed in claim 1 wherein the ingredients of the oil are as under:-". This amendment restricts the scope of the claim to the ingredients of the oil only.

(ii) Claim 3: It is mentioned that claim 3 is not supported in its entirety in the description. The Applicant submits that this claim does find support in the description. For example, paragraphs 3 and paragraph 4 bridging pages 5 and 6, describe the oil composition. Specifically, lines 20 to 29 at page 5 describe the oil composition. Similarly, example 3 on page 9 also describes the oil composition. As such, this claim is well supported by the description.

Yet, in order to remove all doubts and on the basis of the above support found in the description, the Applicant submits herewith pages 4 and 5 of the description wherein at lines 27 to 30, literal support for this claim has been inserted.

iii) Claim 5: Literal support for 'rose oil' appearing in claim 5 has now been provided at page 5 line..... of the description. The oils recited in this claim are indeed fragrance oils. And, therefore, the word 'essential oil' in claim 5 has been deleted.

## AMENDMENTS TO THE CLAIMS:

1. Oil extracted from the seeds of *Momordica charantia* L., for topical application to the body of a mammal, and useful as anti-inflammatory, anti-arthritis, vasculodilatory and wound healing agent, said oil comprising essentially of::
 

Capric acid	0.7-1.2% by wt.
Lauric acid	0.6-1% by wt.
Palmitic acid	4.2-5.0% by wt.
Stearic acid	59-62% by wt.
Oleic acid	13-15% by wt.
Arachidic acid	3-5% by wt.
Linoleic acid	8-10% by wt.
Other undetected minor acids	6-8% by wt.
  
2. Oil as claimed in claim 1 wherein ~~the preferred range of the ingredients of the oil is~~ are as under:-
 

Capric acid	0.9% by wt.
Lauric acid	0.8% by wt.
Palmitic acid	4.2 % by wt.
Stearic acid	60.90% by wt.
Oleic acid	13.30% by wt.
Arachidic acid	3.20% by wt.
Linoleic acid	9.80% by wt.
Other minor undetected <u>components and</u> <del>minor acids</del>	6.90% by wt.
  
3. A novel oil composition comprising:-
 

<del>and</del> oil extracted from the	70 to 80% by wt.
of <i>Momordica charantia</i> L,	
one or more vegetable oils, _	15 to 25% by wt.



fragrance oil, 3% by wt.  
essential oil 1% by wt.  
and at least one perfume component 2% by wt.

4. An oil composition as claimed in claim 3 wherein the vegetable oil is selected from sesame oil, coconut oil, groundnut oil, olive oil, palm oil and other foodgrade oil.
5. An oil composition as claimed in claim 3 wherein the essential oil is selected from rose oil, sandalwood oil, geranium oil or lavender oil.
6. An oil composition as claimed in claim 3 wherein the composition is in physical forms selected from cream, gel, lotion, ~~capsule~~ or combinations thereof.
7. An oil composition as claimed in claim 3 wherein the composition is prepared by mixing the oil extracted from *Momordica charantia* L. with suitable pharmaceutically acceptable carriers.
8. A process for the extraction of oil from the seeds of *Momordica charantia* L., comprising the steps of :
  - (i) grinding dry seeds to a fine powder in a suitable mill,
  - (ii) treating the pulverized seeds with a mixture of non- polar solvents,
  - (iii) allowing the mixture to stand for 48 hours at room temperature so that the oil separates out,
  - (iv) collecting the oil from the supernatant layer using a separating funnel.

fragrance oil, 3% by wt.  
 essential oil 1% by wt.  
 and at least one perfume component 2% by wt.

4. An oil composition as claimed in claim 3 wherein the vegetable oil is selected from sesame oil, coconut oil, groundnut oil, olive oil, palm oil and other foodgrade oil.
5. An oil composition as claimed in claim 3 wherein the ~~essential~~ fragrance oil is selected from rose oil, sandalwood oil, geranium oil or lavender oil.
6. An oil composition as claimed in claim 3 wherein the composition is in physical forms selected from cream, gel, lotion, ~~capsule~~ or combinations thereof.
7. An oil composition as claimed in claim 3 wherein the composition is prepared by mixing the oil extracted from *Momordica charantia* L. with suitable pharmaceutically acceptable carriers.
8. A process for the extraction of oil from the seeds of *Momordica charantia* L., comprising the steps of :
  - (i) grinding dry seeds to a fine powder in a suitable mill,
  - (ii) treating the pulverized seeds with a mixture of non- polar solvents,
  - (iii) allowing the mixture to stand for 48 hours at room temperature so that the oil separates out,
  - (iv) collecting the oil from the supernatant layer using a separating funnel.

- (v) refluxing the mixture obtained in step (iv) with any non-polar solvent to remove the last traces of oil,
  - (vi) purifying the oil by adding 2-5% zinc acetate dissolved in water to precipitate the salts with impurities from the oil, and
  - (vii) analysis of the oil extracted by gas liquid chromatography.
9. A process as claimed in claim 8 wherein the seeds of *Momordica charantia* L., are split, washed thoroughly with water 2-3 times to render the seeds substantially free from impurities and dried under vacuum before said grinding in step (i).
10. A process as claimed in claim 8 wherein the non-polar solvent comprises a mixture of acetone with an aromatic or aliphatic hydrocarbon selected from the group of benzene, hexane, petroleum ether and ethyl ether.
11. A process as claimed in claim 10 wherein the ratio of the aliphatic or aromatic hydrocarbon in the non-polar solvent mixture is 2:1.
12. Use of the oil extracted from *Momordica charantia* L or its composition for treatment of inflammation, arthritis, vasculodilation and wounds in a patient body, by applying the oil or composition as claimed in claims 1 to 7 on the affected area of the patient body for a period of about six to twenty weeks.

**CLAIMS:**

1. Oil extracted from the seeds of *Momordica charantia* L., for topical application to the body of a mammal, and useful as anti-inflammatory, anti-arthritis, vasculodilatory and wound healing agent, said oil comprising essentially of::

Capric acid	0.7-1.2% by wt.
Lauric acid	0.6-1% by wt.
Palmitic acid	4.2-5.0% by wt.
Stearic acid	59-62% by wt.
Oleic acid	13-15% by wt.
Arachidic acid	3-5% by wt.
Linoleic acid	8-10% by wt.
Other undetected minor acids	6-8% by wt.

2. Oil as claimed in claim 1 wherein the ingredients of the oil are as under:-

Capric acid	0.9% by wt.
Lauric acid	0.8% by wt.
Palmitic acid	4.2 % by wt.
Stearic acid	60.90% by wt.
Oleic acid	13.30% by wt.
Arachidic acid	3.20% by wt.
Linoleic acid	9.80% by wt.
Other minor undetected components and acids	- 6.90% by wt.

3. A novel oil composition comprising:-  
oil extracted from the | 70 to 80% by wt.  
of *Momordica charantia* L,  
one or more vegetable oils, 15 to 25% by wt.

fragrance oil, 3% by wt.  
essential oil 1% by wt.  
and at least one perfume component 2% by wt.

4. An oil composition as claimed in claim 3 wherein the vegetable oil is selected from sesame oil, coconut oil, groundnut oil, olive oil, palm oil and other foodgrade oil.
5. An oil composition as claimed in claim 3 wherein the fragrance oil is selected from rose oil, sandalwood oil, geranium oil or lavender oil.
6. An oil composition as claimed in claim 3 wherein the composition is in physical forms selected from cream, gel, lotion, or combinations thereof.
7. An oil composition as claimed in claim 3 wherein the composition is prepared by mixing the oil extracted from *Momordica charantia* L. with suitable pharmaceutically acceptable carriers.
8. A process for the extraction of oil from the seeds of *Momordica charantia* L., comprising the steps of :
  - (i) grinding dry seeds to a fine powder in a suitable mill,
  - (ii) treating the pulverized seeds with a mixture of non- polar solvents,
  - (iii) allowing the mixture to stand for 48 hours at room temperature so that the oil separates out,
  - (iv) collecting the oil from the supernatant layer using a separating funnel.

SUBSTITUTE SHEET (ART 34)

- (v) refluxing the mixture obtained in step (iv) with non-polar solvent to remove the last traces of oil,
  - (vi) purifying the oil by adding 2-5% zinc acetate dissolved in water to precipitate the salts with impurities from the oil, and
  - (vii) analysis of the oil extracted by gas liquid chromatography.
9. A process as claimed in claim 8 wherein the seeds of *Momordica charantia* L., are split, washed thoroughly with water 2-3 times to render the seeds substantially free from impurities and dried under vacuum before the grinding in step (i).
10. A process as claimed in claim 8 wherein the non-polar solvent comprises a mixture of acetone with an aromatic or aliphatic hydrocarbon selected from the group of benzene, hexane, petroleum ether and ethyl ether.
11. A process as claimed in claim 10 wherein the ratio of the aliphatic or aromatic hydrocarbon in the non-polar solvent mixture is 2:1.
12. Use of the oil extracted from *Momordica charantia* L or its composition for treatment of inflammation, arthritis, vasculodilation and wounds in a patient body, by applying the oil or composition as claimed in claims 1 to 7 on the affected area of the patient body for a period of about six to twenty weeks.

- (i) grinding the dry seeds to a fine powder in a suitable mill,
- (ii) treating the pulverized seeds with a mixture of non-polar solvents,
- 5 (iii) allowing the mixture to stand for 48 hours at room temperature so that the oil separates out,
- (iv) collecting the oil from the supernatant layer using a separatory funnel,
- 10 (v) refluxing the mixture obtained in step (vi) with any non-polar solvent to remove the last traces of oil, and
- (vi) purification of the oil by precipitating the salts with impurities in it.
- 15 In one embodiment, the seeds of *Momordica charantia* L., are split, washed thoroughly with water, 2-3 times to render it substantially free from impurities and dried under vacuum, before using the seeds for extraction of the oil.
- In another embodiment, the non-polar solvents used for extraction of oil may comprise a
- 20 mixture of acetone with an aromatic or aliphatic hydrocarbon selected from the group of benzene, hexane, petroleum ether and ethyl ether.
- In yet another embodiment, the ratio of acetone to the aliphatic or aromatic hydrocarbon in the non-polar solvent mixture may be 2:1.
- 25 In yet another feature, 2-5% zinc acetate dissolved in water may be used to precipitate the proteins and other impurities in the oil.
- In another feature, the oil extracted is analyzed for its fatty acid contents using gas liquid
- 30 chromatography (GLC).
- It may be noted that most of the plant parts of *Momordica* contain the oil disclosed by the invention, in varying degrees. As such, the oil may be extracted using any plant parts preferably seeds.
- 35 A novel oil composition comprising oil extracted from the seeds of *Momordica charantia* L 70 to 80% by wt., one or more vegetable oils-15 to 25% by wt., fragrance oil - 3% by wt, essential oil - 1% by wt, and at least one perfume component - 2% by wt.

In accordance with the present invention, the oil obtained from the seeds of *Momordica charantia* L., is thick reddish-orange in colour, having bitter taste. The oil extracted by the method described hereinabove is obtained in 98.5% purity. The oil is water immiscible. However, it is soluble in non-polar solvents like benzene, petroleum ether, ethyl ether, acetone and hexane.

The applicant through continued usage and after rigorous experimentation has found that the oil exhibits anti-inflammatory, anti-arthritis, vasculodilatory properties as it contains several unsaturated components like linoleic acid, oleic acid etc which are known for their antioxidant & anti-inflammatory properties.

It is found that the oil extracted from *Momordica charantia* L., is very thick and it is preferably used with diluents. Preferably, the oil may be mixed with other essential or vegetable oils. The essential oils that may be mixed with the oil from *Momordica charantia* could be selected from coconut oil, sesame oil, sunflower oil, olive oil, palm oil, groundnut oil or any such food grade oil. Further, it is found that when such food grade oils are mixed with the oils of *Momordica*, the penetration of the oil mixture into the outermost layers of the skin is enhanced to a great extent. The *Momordica* oil composition of the invention is prepared by mixing the 75% of the oil of *Momordica charantia* L., with vegetable oils selected from coconut oil, sesame oil sunflower oil, palm oil, olive oil or groundnut oil.

*Momordica charantia* oil composition may be prepared by mixing the oil extracted from *Momordica charantia* L., with vegetable oils and essential oils. The composition may also include, if desired, a botanical fragrance oil such as lavender oil, sandalwood oil, rose oil and geranium oils. The oil composition may further include a perfume component or other pharmaceutically acceptable additives. The oil composition is generally in the form of oil, cream, lotion, gel, capsule